TUBERCULOSIS INFECTION CONTROL PROGRAM

TB Infection Control Program for _____
(Health Department Name)

I. Assignment of Responsibility.

A. _____*(PersonIPosition)* has overall responsibility for TB infection control in _____ *(Health Department Name)*.

B. If additional expertise exists within the department in the areas of infection control, occupational health and engineering, personnel from those areas will be included in infection control decision making. *(If your department has an infection control committee, attach its duties and membership as an appendix.* ***Appendix A*** *provides a voluntary form for committee membership.)*

II. Risk Assessment, TB Infection Control Plan and Periodic Reassessment.

A. Initial risk assessment.

This agency is not defined as a health care facility by OSHA/Commerce and do not have to perform a risk assessment. Nonmandatory **Appendix B** is included to assist in tracking the drug susceptibility patterns of TB cases in your jurisdiction.

B. Written TB infection control program.

The risk level for this agency is defined as low risk for the purpose of surveillance of affected staff and other applicable measures for the detection and control and treatment of TB.

C. As our agency is not defined as a facility, we are not required to repeat the risk assessment process. *(As a resource to the community the Local Health Department should update community TB profile and drug susceptibility data annually.)*

III. Identification, evaluation, and treatment of patients who have TB.

As a public health agency engaged in the prevention of transmission of TB, we have an obligation to identify clients with possible TB and move them toward evaluation and effective treatment. A protocol for this program is included in **Appendix C.**

IV. Managing outpatients who have possible infectious TB in Ambulatory Care and Emergency Departments.

This section does not apply to our agency.

V. Managing inpatients who have possible infectious TB.

We are not an inpatient facility. This section is not applicable to our agency.

As a public health agency, we have concerns over and often have follow-up responsibilities for, discharged patients that remain infectious. The CDC discharge planning recommendations for TB patients are included as Information Sheet 4.

VI. Engineering Recommendations.

We are not a facility that is required to have negative pressure isolation rooms. This section is not applicable to our agency.

VII. Respiratory Protection.

A. When respirators must be used they will be chosen from NIOSH approved respirators for tuberculosis, at a minimum N-95.

B. NIOSH approved respirators for TB must be worn by staff that are treating known or suspect TB patients (i.e., directly observed therapy). Respirators shall be worn when treating that patient until they are no longer infectious.

C. This agency does not perform high hazard procedures on known or suspect TB patients. The use of respiratory protection for high hazard procedures is not applicable.[1]

D. All persons that must enter a room (i.e., home, jail) of a known or suspect TB patient must be fitted for a respirator. The written respiratory protection program for disposable respirators for TB is included as **Appendix D** to this

[1] If your agency is performing high hazard procedures on known or suspect TB patients (sputum induction) you must wear a respirator. Also see information sheet 5 on cough inducing procedures.

document. It details our respiratory protection policy. _____ *(PersonIPosition* is in charge of our TB respiratory protection program.

VIII. Cough Inducing Procedure.

We do not perform cough inducing procedures on known or suspect TB patients. This section is not applicable to our health department.

IX. HCW TB Training and Education.

A. All[2] health care workers in this agency will receive initial TB training when hired and periodic retraining every _____. years[3]

B. The training elements are included in Appendix E.[4]

C. The person in charge of TB training for this agency is _____. *(PersonIPosition)*.

X. Screening

A. Two-step PPD skin testing will be performed at the time of employment for new employees and at the initiation of this program for existing employees.[5]

B. Annual[6] PPD skin testing surveillance of all staff (covered staff) will be performed.

---

[2]Technically you could limit this to "Health Care Workers that will be providing care to known or suspect TB patients." In not including everyone in the training, there is more likely to be misinformation and complaints because people were not included.

[3]Originally OSHA/Commerce required annual retraining. The language is now periodic. You must decide on the periodicity while maintaining an effectively trained staff.

[4]CDC has 13 training elements they wish covered. These elements have been included as **Appendix E** of this document. OSHA/Commerce requires only five elements. They are included in **Appendix F** of this document. Many of the CDC training elements do not apply to a local public health department. The OSHA/ Commerce categories are more broad. You can choose between them. You can leave out inappropriate CDC elements as long as the basic OSHA/Commerce elements are met.

[5]If a PPD skin test has been performed on the individual in the past 12 months, then only a one step is needed.

[6]Annual is the minimal periodicity for low risk which we are assuming for the health department.

C. Those employees unable or unwilling to be evaluated by PPD skin testing will be medically evaluated by signs and symptoms. *(Non-mandatory* **Appendix G** *is included to assist in this evaluation.)*

D. All PPD skin tests will be read by a qualified individual (not the person to whom the test was applied) consistent with the interpretative guidelines set by CDC.

E. All *(covered)* health care workers will receive information on TB infection and TB disease. The person responsible for counseling is _____*(PersonIPosition).*

F. All *(covered)* health care workers will be given information on the risk to immunocompromised persons for developing active TB. This includes the HCW as well as patients and clients. This information will be consistent with current CDC recommendations. The person responsible for this counseling is _____ *(PersonIPosition)*.

XI. HCW Exposure Follow-up

A. All *(covered)* health care workers will receive counseling on TB infection and TB disease. The person responsible for counseling is _____ *(PersonIPosition)*.

B. All *(covered)* health care workers will be counseled on the risk to immunocompromised persons for developing active TB. This includes the HCW as well as patients and clients. This counseling will be consistent with current CDC recommendations. The person responsible for this counseling is _____ *(PersonIPosition)*.

C. _____ *(PersonIPosition)* will determine if staff have been exposed to infectious tuberculosis after having significant contact, without the benefit of all appropriate exposure control measures, with a patient whose sputum culture or nucleic acid amplification test (NAAT) is positive for *M. t*b, and who has *not* met all four criteria below to indicate that the patient is non-infectious:

- Has 3 consecutive negative AFB sputum smears obtained on 3 different days; **and**
- Has completed at least 2 weeks of multi-drug anti-tuberculosis therapy if ever AFB sputum smear positive, or at least 4 days of multi-drug anti-tuberculosis therapy if always AFB sputum smear negative; **and**
- Exhibits clinical improvement; **and**
- Has continued close medical supervision

D. PPD skin testing of staff exposed to infectious tuberculosis will be performed at baseline and again 90 days after the exposure occurred.

E. Those employees unable or unwilling to be evaluated by PPD skin testing will be medically evaluated by signs and symptoms. *(Non-mandatory* **Appendix G** *is included to assist in this evaluation.)*

F. All PPD skin tests will be read by a qualified individual (not the person to whom the test was applied) consistent with the interpretative guidelines set by CDC.

XII. Evaluate HCW PPD Test Conversions and Possible Nosocomial of M. Tuberculosis

This agency will evaluate TB test conversions of their staff and initiate appropriate epidemiologic investigations. **Appendix H** is the CDC flow chart for investigating health care worker conversions. **Appendix I** details the protocol for such an investigation.

This agency does not have the lead responsibility for tracking nosocomial transmission of TB.

XIII. Coordinate Efforts with Local Health Department

We are a local health department. Other health care facilities must coordinate with us.

APPENDIX A

Committee with Supervisory Responsibility for the TB Prevention and Control Program

_____ is designated as the TB Contact Person having lead responsibilities of the committee and overseeing the plan.
(insert name of person and position)

Name of Committee Members	Position

APPENDIX B

DRUG SUSCEPTIBILITY PROFILE FOR ALL TB CASES

Place one of the following abbreviations in the column for all first and second line drugs for each case ID:

S = Susceptible ***R*** = Resistant **-** = Not Known

DATE	CASE ID	FIRST LINE DRUGS							SECOND LINE DRUGS										
		Isoniazid	Rifampin	Pyrazinamide	Ethambutol	Streptomycin			Capreomycin	Kanamycin	Ethionamide	Para-aminosalicylic Acid	Cycloserine	Ciprofloxacin	Ofloxacin	Amikacin	Clofazimine		

APPENDIX C

PROTOCOL FOR EARLY IDENTIFICATION, EVALUATION, TREATMENT, AND MANAGEMENT OF CLIENT'S WITH POSSIBLE ACTIVE TB

The criteria used in these protocols will be based on the prevalence and characteristics of TB in the population served by the local health department. Regardless of the prevalence, protocols must be in place. These protocols should be evaluated periodically and revised according to the results of the evaluation. Review of medical records of health department clients diagnosed as having TB may serve as a guide for developing or revising these protocols.

A diagnosis of TB may be considered for any client who has a persistent cough (i.e., a cough lasting for $\geq$ 3 weeks) or other signs or symptoms compatible with active TB (e.g., bloody sputum, night sweats, weight loss, anorexia, or fever). However, the index of suspicion for TB will vary in different geographic areas and will depend on the prevalence of TB and other characteristics of the population served by the health department. The index of suspicion for TB should be very high in geographic areas or among groups of clients in which the prevalence of TB is high. Appropriate diagnostic measures should be conducted and TB precautions implemented for clients in whom active TB is suspected.

1. Triage of clients shall include vigorous efforts to promptly identify patients who have active TB. HCWs who are the first points of contact in facilities that serve populations at risk for TB shall be trained to ask questions that will facilitate identification of clients with signs and symptoms suggestive of TB.

2. Clients with signs or symptoms suggestive of TB shall be evaluated promptly using TB precautions.

3. TB precautions will include a) placing these clients in a separate area apart from other clients, and not in open waiting areas; b) giving these clients surgical masks to wear and instructing them to keep their masks on; and c) giving these clients tissues and instructing them to cover their mouths and noses with the tissues when coughing or sneezing.

4. TB precautions will be followed for clients who are known to have active TB and who have not completed therapy until a determination has been made that they are noninfectious. All TB clients will be considered infectious until they a) have received adequate therapy for 2 to 3 weeks; b) demonstrate clinical improvement; and c) have three consecutive negative sputum smears collected on different days.
5. This facility will use written protocol for early identification of clients with TB symptoms, implementation of TB precautions, and appropriate referral to a

collaborating facility where the client can be evaluated, treated, and managed.

6. HCWs will be informed during training who to report identified clients to and who is designated as the contact person.

APPENDIX D

D R A F T
SAMPLE WRITTEN

RESPIRATORY PROTECTION PROGRAM FOR DISPOSABLE RESPIRATORS WHICH ARE NIOSH APPROVED FOR PROTECTION AGAINST TUBERCULOSIS

Wisconsin Department of Health and Family Services
Division of Health
Bureau of Public Health
Section of Occupational Health

OSHA Consultation Program

RESPIRATORY PROTECTION PROGRAM
FOR DISPOSABLE RESPIRATORS WHICH ARE
NIOSH APPROVED FOR PROTECTION AGAINST TUBERCULOSIS

_____Milwaukee staff of the Bureau of Communicable Diseases, Division of Public Health, Department of Health and Family Services

(company name)

This respiratory protection program establishes the use and maintenance of respiratory protection equipment which is needed to reduce employee exposure to airborne tuberculosis.

The administration of the respiratory protection program is the responsibility of _Director of the Bureau of Communicable Diseases.

Responsibilities include:

A. IDENTIFICATION AND LOCATION OF POTENTIAL TB EXPOSURES.

B. RESPIRATOR SELECTION.

C. MEDICAL EVALUATION OF RESPIRATOR USERS.

D. EMPLOYEE TRAINING AND RESPIRATOR FIT TESTING.

E. MAINTENANCE AND STORAGE OF RESPIRATORS.

F. EVALUATION OF OVERALL RESPIRATOR PROGRAM.

A. Identification and location of potential TB exposures. Disposable respirators which are NIOSH approved for protection against tuberculosis must be worn under the following circumstances:

When employees enter rooms housing individuals with suspected or confirmed infectious TB disease.

When employees perform high hazard procedures on individuals who have suspected or confirmed TB disease. Examples of high hazard procedures include aerosolized medication (e.g., pentamidine) treatment, bronchoscopy, sputum induction, endotracheal intubation and suctioning procedures, and autopsies.

When emergency-medical response personnel or others must transport, in a closed vehicle, an individual with suspected or confirmed TB disease.

NOTE: If your facility is not involved in some of these activities, line them out and say Not Applicable (NA). If you are a home health agency and you will be wearing respirators for home visits to known or suspect cases, you may want to elaborate on the first circumstance. If you only perform one of the high hazard procedures in your facility, line out the others to tailor to your facility.

B. Respirator Selection.

All respirators will be selected based on the criteria established by current OSHA regulations. Only respirators having NIOSH approval for protection against tuberculosis shall be used. Currently the only disposable respirators accepted by OSHA for protection against tuberculosis are those which meet the N95 criteria or greater.

C. Medical Evaluation of Respirator Users.

Prior to assignment to any position at which a respirator is used, a medical evaluation of the employee's physical ability to work while wearing a respirator is necessary. The type of medical evaluation needed is at the discretion of the physician. An evaluation will be done on an annual basis. If a change in the employee's medical condition occurs, a medical reevaluation shall be performed.

Appendix A and the respirator to be worn will be sent along with the employee for the evaluation. Physician's approval, using Appendix A, will be necessary before the employee can use the respirator.

D. Employee Training and Respirator Fit Testing.

Training in the use and limitations of respirators will be provided to all respirator users. Initial training and refresher training will be conducted by _ Bureau of Occupational Health, Division of Public Health, Department of Health and Family Services. Appendix B serves as a guide for the training as well as a documentation of training dates. During training, employees will be advised of the potential hazards associated with exposure to TB.

Fit testing will be performed by _ Bureau of Occupational Health, Division of Public Health, Department of Health and Family Services as part of the employee training program and periodically thereafter. A record of the tests will be maintained using Appendix C.

E. Maintenance and Storage of Respirators.

Maintenance of respirators will be the responsibility of each individual employee.

Respirators will be issued to individual workers.

Procedures for maintenance and storage are outlined in Appendix D.

F. Respirator Program Evaluation.

The overall evaluation of the disposable respirator program will be conducted by _ Bureau of Occupational Health, Division of Public Health, Department of Health and Family Services on an annual basis, or more often if necessary. This evaluation will include inspection of records contained in the appendices, observation of user proficiency, and random inspection of respirators for cleanliness, deterioration, proper selection and proper storage. A record of the evaluation will be recorded using Appendix E.

G. Established _____
(Date)

_____
Executive Officer

RESPIRATORY PROTECTION PROGRAM
APPENDIX A

Dear Dr.

It is our company policy that before a worker can be required to wear a disposable respirator on the job, a medical evaluation is needed to determine if the worker is capable of wearing the protective device.

The following pertains to the type of work performed and the respirator used.

Employee: _____ Respirator: _____
Date: _____ Job Description: _____
Estimated Respirator Use Time: _____
_____ Work
Activity:_____
Air Contaminant Exposed To: tuberculosis

Upon completion of the evaluation, please complete the following and return to me.

Based on my evaluation, _____
(employee name)

❑ Has no medical condition which would be aggravated by or interfere with the use of respirator protection.

❑ Can wear a respirator with the following restrictions:

_____

_____

_____

❑ Should not be required to wear respiratory protection.

Doctor's signature _____

Date _____

Thank You,

RESPIRATORY PROTECTION PROGRAM
APPENDIX B

Respirator User Training and Education

1. The user is instructed in the hazards of TB during annual TB training.

2. Instruction will include a discussion of the respirator's capabilities and limitations.

3. A detailed discussion of the user's responsibility for inspection of equipment prior to use and methods of inspection will be included. Each user will have a respirator during this part of training.

4. Instruction and training will include storage and maintenance of disposable respirators. *[Disposable respirators cannot be cleaned.]*

5. Instructions on donning methods, proper fitting and adjustment of the respirators will be given. Each user will then don the respirator in an atmosphere of normal air, prior to a fit testing exercise.

6. Fit testing specific for the disposable respirator will be given.
(see Appendix C)

7. A record of employees and the dates and types of initial training and subsequent refresher training will be maintained.

TRAINING RECORD

Name	Department	Respirator Type	Date

_____
(Signature of Trainer)

RESPIRATORY PROTECTION PROGRAM
APPENDIX C

Respirator Qualitative Fit Test

Name: _____

Date of Test: _____

Type and Brand of Respirator _____

NIOSH Approval No. _____

Evaluator: _____

Most comfortable respirator selected?

	(check one) OK	or NO
Employee is shown how to don and adjust respirator for proper fit:		
Position of mask on nose, chin and cheek	❑	❑
Room for eye protection	❑	❑
Room to talk	❑	❑
Proper fit observed by evaluator	❑	❑
Employee dons and wears respirator for 5 minutes	❑	❑
The positive pressure test and negative pressure test procedure will be followed according to the manufacturer's fit check instructions.	❑	❑
Fit Test method used (e.g., irritant smoke, saccharine) (*circle one*)		
1. Normal breathing	❑	❑
2. Deep breathing	❑	❑
3. Turning head side to side	❑	❑
4. Moving head up and down		❑ ❑
5. Talking	❑	❑
6. Grimacing	❑	❑
7. Bending over	❑	❑
8. Normal breathing	❑	❑

Comments:

RESPIRATORY PROTECTION PROGRAM
APPENDIX D

Maintenance and Storage

Storage

When the respirator is not in use, it should be placed in an area protected from damage and contamination. Respirators should be stored in a breathable container to inhibit the growth of mold. Avoid distorting the respirator during storage. *(examples include plastic breathable vegetable, ziplock bags or paper bags)*

Inspection of Respirator

The respirator must be inspected prior to each use to insure that it will function properly. Examine each part of the respirator for defects. Discard the respirator if defects are found.

Check for the following:

Distorted or badly worn parts.

Straps that have lost elasticity, are cut, or otherwise damaged.

Damage such as tears, holes, etc.

Any other condition that shows the respirator will not give adequate protection.

Disposable respirators cannot be cleaned.

RESPIRATORY PROTECTION PROGRAM
APPENDIX E

Respirator Program Evaluation

1. Are records complete and up to date? Yes _____ No _____
If no, what action has been taken to improve future performance?

_____

_

_____

_

2. Are employees wearing the proper respirators? Yes _____ No _____
If no, what action has been taken to ensure that employees wear appropriate respirators?

_____

__

_____

__

3. Have employees who wear respirators had a medical evaluation and were they fit tested? Yes _____ No _____
If no, what is being done to correct the situation?

_____

_

_____

_

4. Have all employees completed their initial or refresher respirator training?
Yes _____ No _____
If no, what is being done to complete training?

_____

___

_____

___

5. Do employees who have completed training understand limitations, use and inspection of respirators?
Yes _____ No _____

If no, what improvements in the training program are being implemented?

_____
___

_____
___

Date: _____ Signature:
_____

APPENDIX E

TRAINING LOG FOR COMPLIANCE WITH CDC GUIDANCE FOR CONTROL OF TUBERCULOSIS

Date of Training Session: _____

Location of Session: _____

Length of Session: _____

Name of Trainer(s): _____

Qualifications of Trainer(s): _____

_____

_____

_____

Content Covered:

1. The basic concepts of M. tuberculosis transmission, pathogenesis, and diagnosis, including information concerning the difference between latent TB infection and active TB disease, the signs and symptoms of TB, and the possibility of reinfection. Emphasis will be given in regards to early identification of clients with TB.

2. The potential for occupational exposure to persons who have infectious TB in the health department, including information concerning the prevalence of TB in the community and facility and situations with increased risk for exposure to M. tuberculosis.

3. The principles and practices of infection control that reduce the risk for transmission of M. tuberculosis, including information concerning the hierarchy of TB infection-control measures and the written policies and procedures of the health department. Site-specific control measures should be provided to HCWs working the areas that require control measures in addition to those of the basic TB infection-control program.

4. The principles and practices of respirator use including, a discussion of the respirator's capabilities and limitations, the user's responsibility for inspection of equipment prior to use and methods of inspection, storage and maintenance of disposable HEPA or other NIOSH approved respirators, instructions on donning methods, proper fitting and adjustment of respirators, and fit testing specific for the disposable respirator.

5. The purpose of PPD skin testing, the significance of a positive PPD test result, and the importance of participating in the skin-test program.

6. The principles of preventive therapy for latent TB infection. These principles include the indications, use, effectiveness, and the potential adverse effects of the drugs.

7. The HCW's responsibility to seek prompt medical evaluation if a PPD test conversion occurs or if symptoms develop that could be caused by TB. Medical evaluation will enable HCWs who have TB to receive appropriate therapy and will help to prevent transmission of M. tuberculosis to clients and other HCWs.

8. The principles of drug therapy for active TB.

9. The importance of notifying the facility if the HCW is diagnosed with active TB so that contact investigation procedures can be initiated.

10. The responsibilities of the facility to maintain the confidentiality of the HCW while ensuring that the HCW who has TB receives appropriate therapy and is noninfectious before returning to duty.

11. The higher risks associated with TB infection in persons who have HIV infection or other causes of severely impaired cell-mediated immunity, including a) the more frequent and rapid development of clinical TB after infection with M. tuberculosis, b) the differences in the clinical presentation of disease, and c) the high mortality rate associated with MDR-TB in such persons.

12. The potential development of cutaneous anergy as immune function (as measured by CD4+ T-lymphocyte counts) declines.

13. Information regarding the efficacy and safety of BCG vaccination and the principles of PPD screening among BCG recipients.

14. The facility's policy on voluntary work reassignment options for immunocompromised HCWs.

15. HCWs responsibility to report client(s) and/or self with signs and/or symptoms consistent with TB to designated person for follow up.

16. The HCW understands facility's post-exposure follow-up protocol.

17. A question and answer session between the trainer(s) and employee(s).

Attendance Record:

Name of Employee	Job Title

APPENDIX F

OSHA/COMMERCE
Required Worker Education and Training

Training and information to ensure employee knowledge of such issues as the mode of TB transmission, its signs and symptoms, medical surveillance and therapy, and site-specific protocols including the purpose and proper use of controls shall be provided to all current employees and to new workers upon hiring. Training should be repeated as needed.

Workers shall be trained to recognize, and report to a designated person, any patients or clients with symptoms suggestive of infectious TB and instructed on the post exposure protocols to be followed in the event of an exposure incident.

APPENDIX G

QUESTIONNAIRE FOR EVALUATION OF SIGNS AND SYMPTOMS OF TB IN HEALTH CARE WORKERS

This form will be used for the following: 1) those who refuse PPD skin testing; 2) those with a history of a positive PPD skin test; or 3) those with a history of active TB disease.

Employee Name _____

History

❑ Refuses PPD Skin Testing

❑ TB Infection

* Positive Mantoux Skin Test ____ Yes ____ No
  Date test administered/read: _____ / _____
  Result of skin test: _____mm

* Chest X-ray ____ Yes ____ No
  Date done: _____
  Findings: _____

* Preventive Therapy ____ Yes ____ No
  If yes, list medication, dosage, duration of therapy, and dates received:
  _____

❑ TB Active Disease

* Positive Mantoux Skin Test ____ Yes ____ No
  Date test administered/read: _____ / _____
  Result of skin test: _____mm

* Chest X-ray ____ Yes ____ No
  Date done: _____
  Findings: _____

* Diagnostic Microbiology (sputum specimen)
  Date/Findings: _____ / _____
  _____ / _____
  _____ / _____

* Treatment
  List medication, dosage, duration of therapy, and dates received:
  _____
  _____
  _____
  _____

over, please

APPENDIX G

Check if individual has experienced any of the following in the past year:

- ❑ weight loss
- ❑ night sweats
- ❑ cough
- ❑ fatigue
- ❑ fever
- ❑ chills
- ❑ coughing up sputum (phlegm from deep in the lungs) or blood
- ❑ loss of appetite
- ❑ pain in the chest when breathing or coughing

Comments: _____

_____

_____

_____

_____ _____ _____

Signature of Interviewer Title Date

For employee:

The above listed signs/symptoms of TB have been reviewed with me. I understand that I must immediately report experiencing any of these symptoms, should they occur. I have received education regarding tuberculosis disease and the risk for developing active tuberculosis.

_____ _____

Employee Signature Date

Protocol for investigating purified protein derivative (PPD)-tuberculin skin-test conversions in health-care workers (HCWs)

APPENDIX I

Investigating PPD Test Conversions And Active TB In HCWs

I. Investigating PPD test conversions in HCWs

PPD test conversions may be detected in HCWs as a result of a contact investigation, in which case the probable source of exposure and transmission is already known, or as a result of routine screening, in which case the probable source of exposure and infection is not already known and may not be immediately apparent.

If a skin-test conversion in a HCW is identified as part of routine screening, the following steps will be considered (See Appendix M):

The HCW will be evaluated promptly for active TB. The initial evaluation will include a thorough history, physical examination, and chest radiograph. On the basis of the initial evaluation, other diagnostic procedures (e.g., sputum examination) will be considered.

If appropriate, the HCW will be placed on preventive or curative therapy in accordance with current guidelines.

A history of possible exposure to *M. tuberculosis* will be obtained from the HCW to determine the most likely source of infection. When the source of infection is known, the drug-susceptibility pattern of the *M. tuberculosis* isolate from the source client will be identified to determine appropriate preventive or curative therapy regimens.

If the history suggests that the HCW was exposed to and infected with *M. tuberculosis* outside the facility, no further epidemiologic investigation to identify a source in the facility is necessary.

If the history does not suggest that the HCW was exposed and infected outside the facility but does identify a probable source of exposure in the facility, contacts of the suspected source client will be identified and evaluated. Possible reasons for the exposure and transmission will be evaluated, interventions will be implemented to correct these causes, and PPD testing of PPD-negative HCWs will be performed immediately and repeated after 3 months.

If no additional PPD test conversions are detected on follow-up testing, the investigation can be terminated.

If additional PPD test conversions are detected on follow-up testing, the possible reasons for exposure and transmission will be reassessed, the

appropriateness of and degree of adherence to the interventions implemented will be evaluated, and PPD testing of PPD-negative HCWs will be repeated after another 3 months.

If no additional PPD test conversions are detected on the second round of follow-up testing, the investigation can be terminated. However, if additional PPD conversions are detected on the second round of testing, a high-risk protocol will be implemented in the affected area or occupational group, and persons with expertise in TB infection control will be consulted.

If the history does not suggest that the HCW was exposed to and infected with *M. tuberculosis* outside the facility and does not identify a probable source of exposure in the facility, further investigation to identify the probable source client in the facility is warranted.

The interval during which the HCW could have been infected will be estimated. Generally, this would be the interval from 10 weeks before the most recent negative PPD test through 2 weeks before the first positive PPD test (i.e., the conversion).

Laboratory and infection-control records will be reviewed to identify all clients or HCWs who have suspected or confirmed infectious TB and who could have transmitted *M. tuberculosis* to the HCW.

If this process does identify a likely source client, contacts of the suspected source client will be identified and evaluated, and possible reasons for the exposure and transmission will be evaluated. Interventions will be implemented to correct these causes, and PPD testing of PPD-negative HCWs will be repeated after 3 months. However, if this process does not identify a probable source case, PPD screening results of other HCWs in the same area or occupational group will be reviewed for additional evidence of *M. tuberculosis* transmission. If sufficient additional PPD screening results are not available, appropriate personnel will consider conducting additional PPD screening of other HCWs in the same area or occupational group.

If this review and/or screening does not identify additional PPD conversions, nosocomial transmission is less likely, and the contact investigation can be terminated. Whether the HCW's PPD test conversion resulted from occupational exposure and infection is uncertain; however, the absence of other data implicating nosocomial transmission suggests that the conversion could have resulted from a) unrecognized exposure to *M. tuberculosis* outside the facility; b) with another antigen (e.g., nontuberculous mycobacteria); c) errors in applying, reading, or interpreting the test; d) false

positivity caused by the normal variability of the test; or e) false positivity caused by a defective PPD preparation.

If this review and/or screening does identify additional PPD test conversions, nosocomial transmission is more likely. In this situation, the client identification (i.e., triage) process, TB infection-control policies and practices, and engineering controls will be evaluated to identify problems that could have led to exposure and transmission.

If no such problems are identified, a high-risk protocol will be implemented in the affected area or occupational group, and persons with expertise in TB infection control will be consulted.

If such problems are identified, appropriate interventions will be implemented to correct the problem(s), and PPD skin testing of PPD-negative HCWs will be repeated after 3 months.

If no additional PPD conversions are detected on follow-up testing, the investigation will be terminated.

If additional PPD conversions are detected on follow-up testing, the possible reasons for exposure and transmission will be reassessed, the appropriateness of and adherence to the interventions implemented will be evaluated, and PPD skin testing of PPD-negative HCWs will be repeated after another 3 months.

If no additional PPD test conversions are detected on this second round of follow-up testing, the investigation will be terminated. However, if additional PPD test conversions are detected on the second round of follow-up testing, a high-risk protocol will be implemented in the affected area or occupational group, and persons with expertise in TB infection control will be consulted.

II. Investigating cases of active TB in HCWs

If a HCW develops active TB, the following steps will be taken:

The case will be evaluated epidemiologically, in a manner similar to PPD test conversions in HCWs, to determine the likelihood that it resulted from occupational transmission and to identify possible causes and implement appropriate interventions if the evaluation suggests such transmission.

Contacts of the HCW (e.g., other HCWs, clients, visitors, and others who have had intense exposure to the HCW) will be identified and evaluated for TB infection and disease.

FORM 1

Sample TB Skin Test Analysis – Newly Hired Staff

Purpose - This form should be used to determine

- The number of employees screened for TB during this assessment period
- The number of employees with active disease or with LTBI identified through screening and TB skin tests [PPD]
- The number of employees started on medication for active TB disease or LTBI treatment
- The number of employees completing treatment for TB disease or LTBI treatment

Agency/Facility _____
TB Control Official _____
Assessment Period ___/___/____ to ___/___/____
No. of employees hired during period for whom screening is required _____ †

Action/Finding This Assessment Period	Number	QA	Comment
Total employees *screened*	a		QA : ***** All new employees requiring screening should be screened.
Number of employees with documented prior + PPD *with* verifiable completion of an approved LTBI treatment regimen.	b		Verify undocumented or questionable + PPD reports by applying a new PPD unless contraindicated by severe past reaction. [Persons with doc. of treatment completion should be re-evaluated periodically with vigilance for active disease on an individualized basis, depending upon their risk factors.]
Number of employees with documented prior + PPD *without* verifiable completion of an approved LTBI treatment regimen.	c		If no approved regimen for LTBI treatment has been completed, a medical evaluation is indicated. (Expect a CXR and LTBI treatment orders unless contraindicated.)
Number of newly hired employees receiving PPD skin testing	d		New employees who will be skin tested periodically: Two-step Mantoux test if no documented negative test in past 12 months. †
Number of newly hired employees with newly identified + PPD results.	e	(c + e) ÷ a x 100 = ____%	This is the rate of untreated new employees entering employment with TB disease or LTBI. (Includes untreated newly identified positives plus untreated past positives ÷ # of new emp. screened this period x 100.)
Number of + PPD employees referred for a medical evaluation	f		All employees with a documented + PPD who have *not completed a full regimen of treatment for LTBI* should be evaluated. (Expect a CXR to rule out active disease & prescription for LTBI treatment unless either is contraindicated/not indicated.)
Number referred who completed evaluation	g	g ÷ f x 100 = ____ %	A medical evaluation should be completed for every employee for whom it is indicated. †
Number screened with active disease diagnosis	h	h ÷ a x 100 = ____%	Active disease rate for newly hired employees. (Diagnosis of active disease means employee must be medically evaluated to be noninfectious to be in work area with others.)
Number starting treatment for active disease	i	i ÷ h x 100 = ____ %	All persons with active disease need treatment to protect the health of the public. Contact Investigation required.
Number completing treatment for active disease	j	j ÷ h x 100 = ___%	All persons diagnosed with active disease who do not complete treatment are a risk to themselves & to the health of the public (also evaluate: j ÷ i x 100 = ___%)
Number of persons screened that were diagnosed as LTBI [k = c + (e – h)]	k	k ÷ a x 100 = ____ %	Pre-treatment LTBI rate, new emp. (Testing requires follow up evaluation and a commitment to treating those infected, unless contraindicated.)
Number starting LTBI treatment	l	l ÷ k x 100 = ____ %	Persons with LTBI should complete a treatment regimen unless contraindicated. (Treatment refused, not implemented or not completed creates a potential risk to the person and to the health of the public - Evaluate (m ÷ k) x 100 = _____%)
Number completing LTBI treatment	m	m ÷ l x 100 = ____ %	Persons starting treatment should complete an approved regimen unless contraindicated to avoid progression to active dis. and potential drug resistance

† Follow employer's licensing/certifying requirements as well as any OSHA , Department of Commerce, or other legal requirements.

Sample TB Skin Test Analysis – Continuing Staff

Purpose - This form should be used to determine

- The number of continuing employees screened for TB during this assessment period who have a TB skin test [PPD] conversion [Increase of 10mm in 2 yrs.]
- The number of employees with active disease or with LTBI identified through screening/skin testing
- The number of employees placed on medication for active TB disease or LTBI treatment & the number who complete therapy.

Agency/Facility _____
TB Control Official _____
Assessment Period ___/___/____ to ___/___/____
No. employees designated to receive screening this period___ †

Action/Finding This Assessment Period	Number	QA	Comments
Total employees screened	a		*All employees designated for screening/testing during the period should be screened or tested as appropriate.
Number of employees with documented prior + PPD *with* verifiable completion of an approved LTBI treatment regimen.	b		Verify undocumented or questionable + PPD reports by applying a new PPD unless contraindicated by severe past reaction. (Continuing employees with *documented* prior + PPD and *documentation* of a completed regimen can be screened for signs, symptoms & exposures; CXR and/or medical evaluation if indicated by findings, physician diagnosis or if required by employer.) †
Number of employees with documented prior + PPD *without* verifiable completion of an approved LTBI treatment reg.	c		**If no approved regimen for LTBI treatment has been completed, employee needs individualized on-going evaluation. (Physician or employer may order a CXR and/or sputum testing. Continue promoting LTBI treatment unless contraindicated, according to risk of active disease.) †
Number of continuing employees receiving PPD skin testing	d		Continuing employees who are periodically skin tested may have a single test if a two step was done upon hire and/or documented within 12 months. †
Number of continuing employees with *newly identified* + PPD results – These are the new converters.	e	e ÷ d x 100 = ____ %	This is the rate of continuing employees with newly identified LTBI infection. (Evaluate number of new converters for possible clusters [**2** or more in 3 mos. MMWR 10-28-94] who, when, where & with whom they had *close* contact, assess for poss. exposure/transmission from known/unknown source.).
Number of PPD + employees referred for a medical evaluation [Includes newly + PPD persons (converters) & any past + PPDs with a screening plan indicating med. eval.]	f		All employees with a documented + PPD who have *not completed a full regimen of treatment for LTBI* need individualized on-going screening. (Physician or employer may order a CXR &/or sputum tests to rule out active disease periodically or based upon sign & symptom screening. Continue promoting LTBI treatment unless contraindicated, according to risk of active disease.)
Number referred who completed evaluation	g	g ÷ f x 100 = ____ %	A medical evaluation should be completed for every employee for whom it is indicated. †
Number screened with an active disease diagnosis	h	h ÷ a x 100 = ___%	Active disease rate for continuing employees (Diagnosis of active disease means employee must be medically evaluated as noninfectious to be in work area with others.)
Number starting treatment for active disease	i	i ÷ h x 100 = ____ %	All persons with active disease need treatment to restore their health and to protect the health of the public. Contact investigation required.
Number completing treatment for active disease	j	j ÷ h x 100 = ____ %	All persons with active disease who do not complete treatment are a risk to themselves and to the health of the public. (Also evaluate: j ÷ i x 100 = ___% - do those starting also complete?)
Number screened with LTBI diagnosis [k = c + (e – h)]	k	k ÷ a x 100 = __%	Pre-treatment LTBI rate, continuing employees. (Testing requires follow up evaluation and a commitment to treating those who are infected, unless contraindicated.)
Number starting LTBI treatment	l	l ÷ k x 100 = ____ %	Persons with LTBI without documented treatment completion should receive medical treatment unless contraindicated. (Treatment refusal creates a potential for risk to the person and to the health of the public.)
Number completing LTBI treatment	m	(m ÷ l) x 100 =___%	Persons beginning treatment should complete an approved regimen unless contraindicated to avoid progression to active disease and potential drug resistance.

† Follow employer's licensing/certifying requirements as well as any OSHA, Department of Commerce, or other legal requirements.

FORM 2

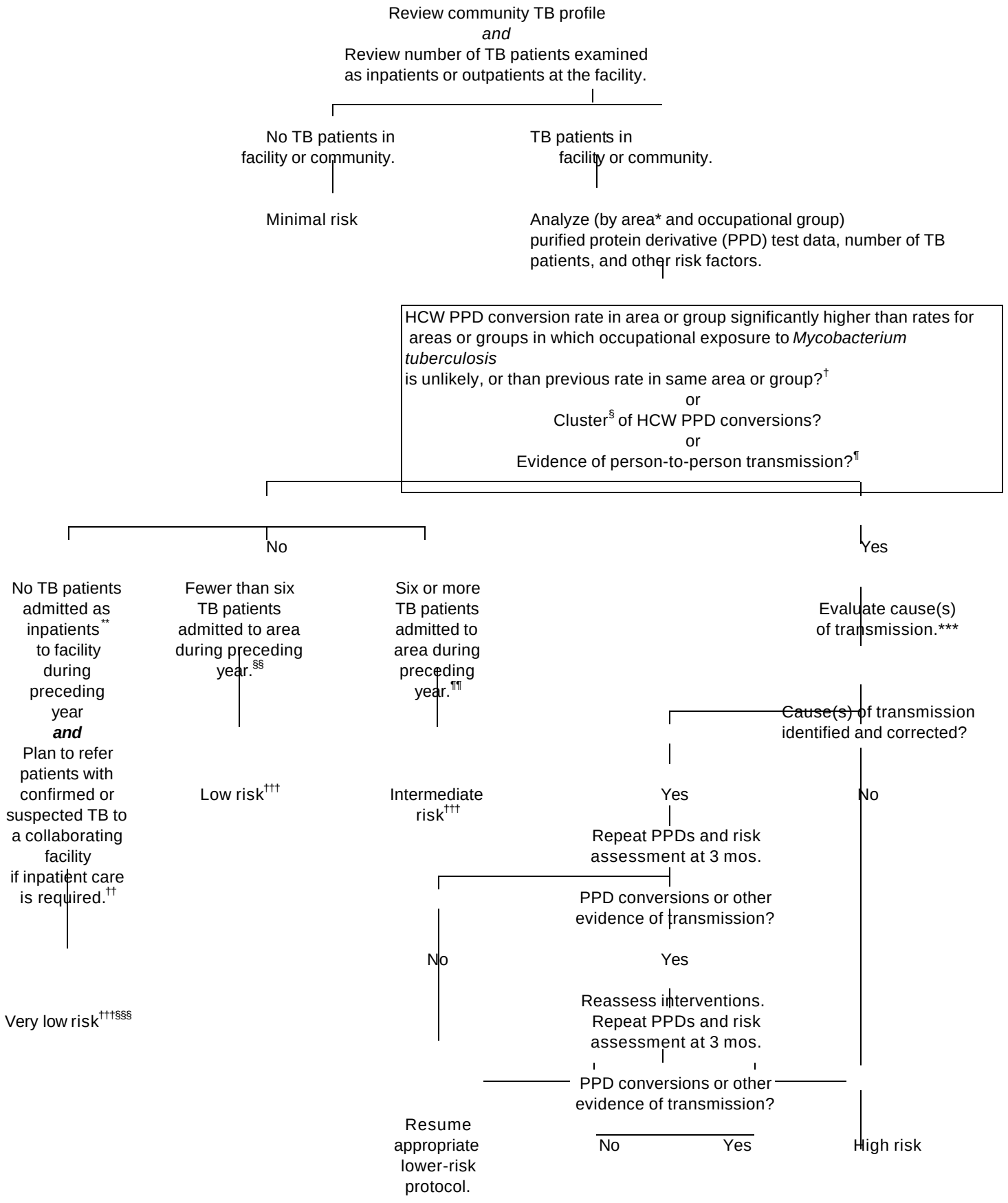
REVIEW OF SUSPECT AND CONFIRMED TB PATIENT MEDICAL RECORDS

NAME OF AGENCY _____

PERSON COMPLETING _____ **DATE COMPLETED** _____

Patient ID Number	Date TB Suspected	PPD SKIN TEST			CHEST X-RAY		AFB SMEARS AND CULTURE				TB TREATMENT REGIMENS	
		Date Applied	Date Read	Results	Date Performed	Results	Date Collected	Smear Result	Date of Culture Result	Culture Result	Date Started	Meds

FIGURE 1. Protocol for conducting a tuberculosis (TB) risk assessment in a health-care facility.



Obtain consultation.

FIGURE 1. Protocol for conducting a tuberculosis (TB) risk assessment in a health-care facility.

* Area: a structural unit (e.g., a hospital ward or laboratory) or functional unit (e.g., an internal medicine service) in which HCWs provide services to and share air with a specific patient population or work with clinical specimens that may contain viable *M. tuberculosis* in a given area depends on the prevalence of TB in the population served and the characteristics of the environment.

† With epidemiologic evaluation suggestive of occupational (nosocomial) transmission (see Problem Evaluation section in the text).

§ Cluster: two or more PPD skin-test conversions occurring within a 3-month period among HCWs in a specific area or occupational group, and epidemiologic evidence suggests occupational (nosocomial) transmission.

¶ For example, clusters of *M. tuberculosis* isolates with identical DNA fingerprint (RFLP) patterns or drug-resistance patterns, with epidemiologic evaluation suggestive of nosocomial transmission (see Problem Evaluation section in the text).

** Does not include patients identified in triage system and referred to a collaborating facility or patients being managed in outpatient areas.

†† To prevent inappropriate management and potential loss to follow-up of patients identified in the triage system of a very low-risk facility as having suspected TB, and agreement should exist for referral between the referring and receiving facilities.

§§ Or, for occupational groups, exposure to fewer than six TB patients for HCWs in the particular occupational group during the preceding year.

¶¶ Or, for occupational groups, exposure to six or more TB patients for HCWs in the particular occupational group during the preceding year.

*** See Problem Evaluation section in the text.

††† Occurrence of drug-resistant TB in the facility or community, or a relatively high prevalence of HIV infection among patients of HCWs in the area, may warrant a higher risk rating.

§§§ For outpatient facilities; if TB cases have been documented in the community but no TB patients have been examined in the outpatient area during the preceding year, the area can be designated as very low risk.

DEFINITIONS OF CLASSIFICATIONS OF RISKS FOR A FACILITY

Definitions of Risk Classification:

Minimal Risk

The "minimal-risk" category applies only to an entire facility. A "minimal-risk" facility does not admit TB patients to inpatient or outpatient areas and is not located in a community with TB (i.e. counties or communities in which TB cases have not been reported during the previous year). Thus, there is essentially no risk for exposure to TB patients in the facility. This category may also apply to many outpatient settings.

Very-Low Risk

The "very-low risk" category generally applies only to an entire facility. A very low-risk facility is one in which a)patients with active TB are not admitted to inpatient areas but may receive initial assessment and diagnostic evaluation or outpatient management in outpatient areas and b) patients who may have active TB and need inpatient care are promptly referred to a collaborating facility. If TB cases have been reported in the community, but no patients with active TB have been examined in the outpatient area during the preceding year, the area can be designated as very low risk. The very low-risk category may also be appropriate for outpatient facilities that do not provide initial assessment of persons who may have TB, but do screen patients for active TB as part of a limited screening before undertaking specialty care.

Low Risk

"Low Risk" areas or occupational groups are those in which (a) the PPD test conversion rate is not greater than that for areas or groups in which occupational exposure to M. tuberculosis is unlikely or than previous conversion rates for the same area or group; (b) no clusters[1] of PPD test conversions have occurred; (c) person-to-person transmission of M. tuberculosis has not been detected; and (d) fewer than six TB patients are examined or treated per year.

[1]Cluster: two or more PPD skin-test conversions occurring within a 3-month period among HCWs in a specific area or occupational group, and epidemiologic evidence suggests occupational (nosocomial) transmission.

Intermediate Risk

"Intermediate Risk" areas or occupational groups are those in which (a) the PPD test conversion rate is not greater than that for areas or groups in which occupational exposure to M. tuberculosis is unlikely or than previous conversion rates for the same area or group, (b) no clusters of PPD test conversions have occurred, (c) person-to-person transmission of M. tuberculosis has not been detected, and (d) six or more patients with active TB are examined or treated each year. Survey data suggest that facilities in which six or more TB patients are examined or treated each year may have an increased risk for transmission of M. tuberculosis (CDC, unpublished data); thus, areas in which six or more patients with active TB are examined or treated each year (or occupational groups in which HCWs are likely to be exposed to six or more TB patients per year) should be classified as "intermediate risk."

High Risk

"High Risk" areas or occupational groups are those in which (a) the PPD test conversion rate is significantly greater than for areas or groups in which occupational exposure to M. tuberculosis is unlikely or than previous conversion rates for the same area or group, and epidemiologic evaluation suggests nosocomial transmission; **or** (b) a cluster of PPD test conversions has occurred, and epidemiologic evaluation suggests nosocomial transmission of M. tuberculosis; **or** (c) possible person-to-person transmission of M. tuberculosis has been detected.

(**NOTE:** If no data or insufficient data for adequate determination of risk have been collected, such data should be compiled, analyzed, and reviewed expeditiously.)

INFORMATION SHEET 3

Managing outpatients who have possible infectious TB in Ambulatory Care and Emergency Departments.

Triage of patients in ambulatory-care settings and emergency departments should include vigorous efforts to promptly identify patients who have active TB. HCWs who are the first points of contact in facilities that serve populations at risk for TB should be trained to ask questions that will facilitate identification of patients with signs and symptoms suggestive of TB.

Patients who signs or symptoms suggestive of TB should be evaluated promptly to minimize the amount of time they are in ambulatory-care areas. TB precautions should be followed while the diagnostic evaluation is being conducted for these patients.

TB precautions in the ambulatory-care setting should include, a) placing these patients in a separate area apart from other patients, and not in open waiting areas (ideally, in a room or enclosure meeting TB isolation requirements); b) giving these patients surgical masks to wear and instructing them to keep their masks on; and c) giving these patients tissues and instructing them to cover their mouths and noses with the tissues when coughing or sneezing.

TB precautions should be followed for patients who are known to have active TB and who have not completed therapy until a determination has been made that they are noninfectious (Supp. 1).

Patients with active TB who need to attend a health-care clinic should have appointments scheduled to avoid exposing HIV-infected or otherwise severely immunocompromised persons to M. Tuberculosis. This recommendation could be accomplished by designating certain times of the day for appointments for these patients or by treating them in areas where immunocompromised persons are not treated.

Ventilation in ambulatory-care areas where patients at high risk for TB are treated should be designed and maintained to reduce the risk for transmission of M. Tuberculosis. General-use areas (e.g., waiting rooms) and special areas (e.g., treatment or TB isolation rooms in ambulatory areas) should be ventilated in the same manner as described for similar inpatient areas (Sections I I.E.3, Suppl. 3). Enhanced general ventilation or the use of air-disinfection techniques (e.g., UVGI or recirculation of air within the room through high-efficiency particulate air [HEPA] filters) may be useful in general-use areas of facilities where many infectious TB patients receive care (Section II.F., Supp. 3).

Ideally, ambulatory-care settings in which patients with TB are frequently examined or treated have a TB isolation room(s) available. Such rooms are not necessary in ambulatory-care settings in which patients who have confirmed or suspected TB are seen

infrequently. However, theses facilities should have a written protocol for early identification of patients with TB symptoms and referral to an area or a collaborating facility where the patient can be evaluated and managed appropriately. These protocols should be reviewed on a regular basis and revised as necessary. The additional guidelines in Section II.H. should be followed in ambulatory-care settings where cough-inducing procedures are performed on patients who have active TB.

INFORMATION SHEET 4

Managing inpatients who have possible infectious TB.

Before a TB patient is discharged from the health-care facility, the facility staff and public health authorities should collaborate to ensure continuation of therapy. Discharge planning in the health-care facility should include, at a minimum, a) a confirmed outpatient is cured, b) sufficient management (e.g.,DOT) or outreach programs of the public health department. These plans should be initiated and in place before the patient's discharge.

Patients who may be infectious at the time of discharge should only be discharged to facilities that have isolation capability or to their homes. Plans for discharging a patient who will return home must consider whether all the household members were infected previously and whether any uninfected household members are at very high risk for active TB if infected (e.g., children <4 years of age, persons infected with HIV, or otherwise severely immunocompromised). If the household does include such persons, arrangements should be made to prevent them from being exposed to the TB patient until a determination has been made that the patient is noninfectious.

INFORMATION SHEET 5

Cough-inducing and Aerosol-Generating Procedures

General Guidelines

Procedures that involve instrumentation of the lower respiratory tract or induce coughing can increase the likelihood of droplet nuclei being expelled into the air. These cough-inducing procedures include endotracheal intubation and suctioning, diagnostic sputum induction, aerosol treatments (e.g., pentamidine therapy), and bronchoscopy. Other procedures that can generate aerosols (e.g., irrigation of tuberculous abscesses, homogenizing or lyophilizing tissue, or other processing of tissue that may contain tubercle bacilli) are also covered by these recommendations.

X Cough-inducing procedures should not be performed on patients who may have infectious TB unless the procedures are absolutely necessary and can be performed with appropriate precautions.

X All cough-inducing procedures performed on patients who may have infectious TB should be performed using local exhaust ventilation devices (e.g., booths or special enclosures) or, if this is not feasible, in a room that meets the ventilation requirements for TB isolation.

X HCWs should wear respiratory protection when present in rooms or enclosures in which cough-inducing procedures are being performed on patients who may have infectious TB.

X After completion of cough-inducing procedures, patients who may have infectious TB should remain in their isolation rooms or enclosures and not return to common waiting areas until coughing subsides. They should be given tissues and instructed to cover their mouths and noses with the tissues when coughing. If TB patients must recover from sedatives or anesthesia after a procedure (e.g., after a bronchoscopy), they should be placed in separate isolation rooms (and not in recovery rooms with other patients) while they are being monitored.

X Before the booth, enclosure, or room is sued for another patient, enough time should be allowed to pass for at least 99% of airborne contaminants to be removed. This time will vary according to the efficiency of the ventilation or filtration used.

Special considerations for bronchoscopy.

X If performing bronchoscopy in positive-pressure rooms (e.g., operating rooms) is unavoidable, TB should be ruled out as a diagnosis before the procedure is performed. If the bronchoscopy is being performed for the purpose of diagnosing pulmonary disease and that diagnosis could include TB, the procedure should be performed in a room that meets TB isolation ventilation requirements.

Special considerations for the administration of aerosolized pentamidine.

X Patients should be screened for active TB before prophylactic therapy with aerosolized pentamidine is initiated. Screening should include obtaining a medical history and performing skin testing and chest radiography.

X Before each subsequent treatment with aerosolized pentamidine, patients should be screened for symptoms of TB (e.g., development of a productive cough). If such symptoms are elicited, a diagnostic evaluation for TB should be initiated.

X Patients who have suspected or confirmed active TB should take, if clinically practical, oral prophylaxis for *Pcarinii* pneumonia.

INFORMATION SHEET 6

Investigating Possible Client-To-Client Transmission Of *M. Tuberculosis*

Surveillance of active TB cases in clients will be conducted. If this surveillance suggests the possibility of client-to-client transmission of *M. tuberculosis* (e.g., a high proportion of TB clients had prior admissions during the year preceding onset of their TB, the number of clients with drug-resistant TB increased suddenly, or isolates obtained from multiple clients had identical and characteristic drug-susceptibility or DNA fingerprint patterns), the following steps will be taken:

Review the HCW PPD test results and client surveillance data for the suspected areas to detect additional clients or HCWs with PPD test conversions or active disease.

Look for possible exposures that clients with newly diagnosed TB could have had to other TB clients during previous admissions. For example, were the clients admitted to the same room or area, or did they receive the same procedure or go to the same treatment area on the same day?

If the evaluation thus far suggests transmission has occurred, the following steps will be taken:

Evaluate possible causes of the transmission (e.g., problem with client detection, institutional barriers to implementing appropriate isolation practices, or inadequate engineering controls).

Ascertain whether other clients or HCWs could have been exposed; if so, evaluate these persons for TB infection and disease.

Consider a community contact investigation if necessary.

INFORMATION SHEET 7

Investigating Contacts Of Clients And HCWs Who Have Infectious TB

If a client who has active TB is examined in a health-care facility and the illness is not diagnosed correctly, resulting in failure to apply appropriate precautions, or if a HCW develops active TB and exposes other persons in the facility, the following steps will be taken when the illness is later diagnosed correctly:

To identify other clients and HCWs who were exposed to the source client before isolation procedures were begun, interview the source client and all applicable personnel and review that client's medical record. Determine the areas of the facility in which the source client visited or worked while at the facility and the HCWs or other employeeswho may have been exposed during that time.

The contact investigation will first determine if *M. tuberculosis* transmission has occurred from the source client to those persons with whom the source client had close contact.

Administer PPD tests to close contacts which may include HCWs, other employees, and clients as soon as possible after the exposure has occurred.

If transmission did occur to the close contacts, then those persons with whom the client had less contact will be evaluated. If the initial PPD test result is negative, a second test will be administered 12 weeks after the exposure was terminated.

Those persons who were exposed to *M. tuberculosis* and who have either a PPD test conversion or symptoms suggestive of TB will receive prompt clinical evaluation and, if indicated, chest radiographs and bacteriologic studies will be performed. Those persons who have evidence of newly acquired infection or active disease will be evaluated for preventive or curative therapy. Persons who have previously had positive PPD test results and who have been exposed to an infectious TB client do not require a repeat PPD test or a chest radiograph. If they have symptoms suggestive of TB, chest radiographs and bacteriologic studies will be performed.

In addition to PPD testing those HCWs, other employees, and clients who have been exposed to *M. tuberculosis* because a client was not isolated promptly or a HCW with active TB was not identified promptly, the investigation will determine why the diagnosis of TB was delayed. If the correct diagnosis was made but the client was not isolated promptly, the reasons for the delay need to be defined so that corrective actions can be taken.